Laboratory Fume Hood Energy Conservation Project

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Bristol-Myers Squibb Company
Wallingford, CT

Wallingford Site Statistics

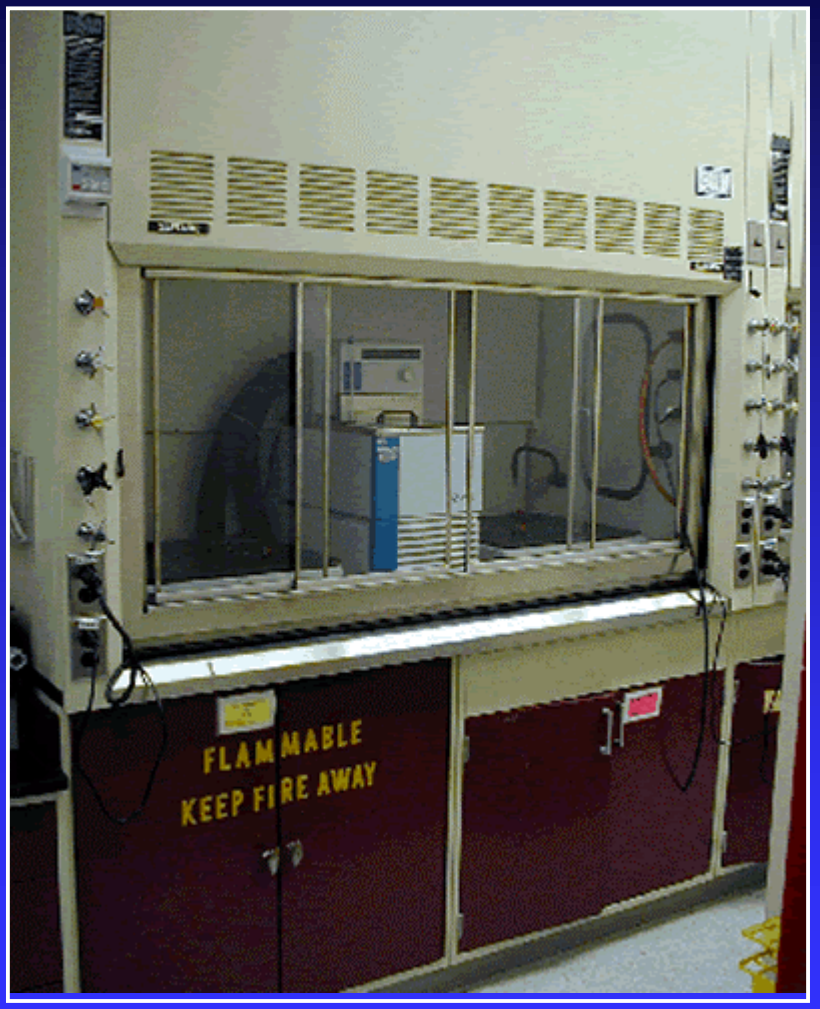
- 177 acre site
- Original construction 1984 - 1987
- 1.0 MM SF (lab, office, vivarium, utility, warehouse
- 1400 site employees
- 100 chemistry labs
- 400 +/- fume hoods (6', 8', 10', walk-ins)

Site Utility Information

- $4.9 MM annual utility expenditures
- 4130 HP for laboratory fans
- 1.2 MM cfm of 100% fresh air AHU's

Typical Fume Hoods

Walk-in hood



Bench type hood

Original Setback Controls

2nd Generation Timer Switch

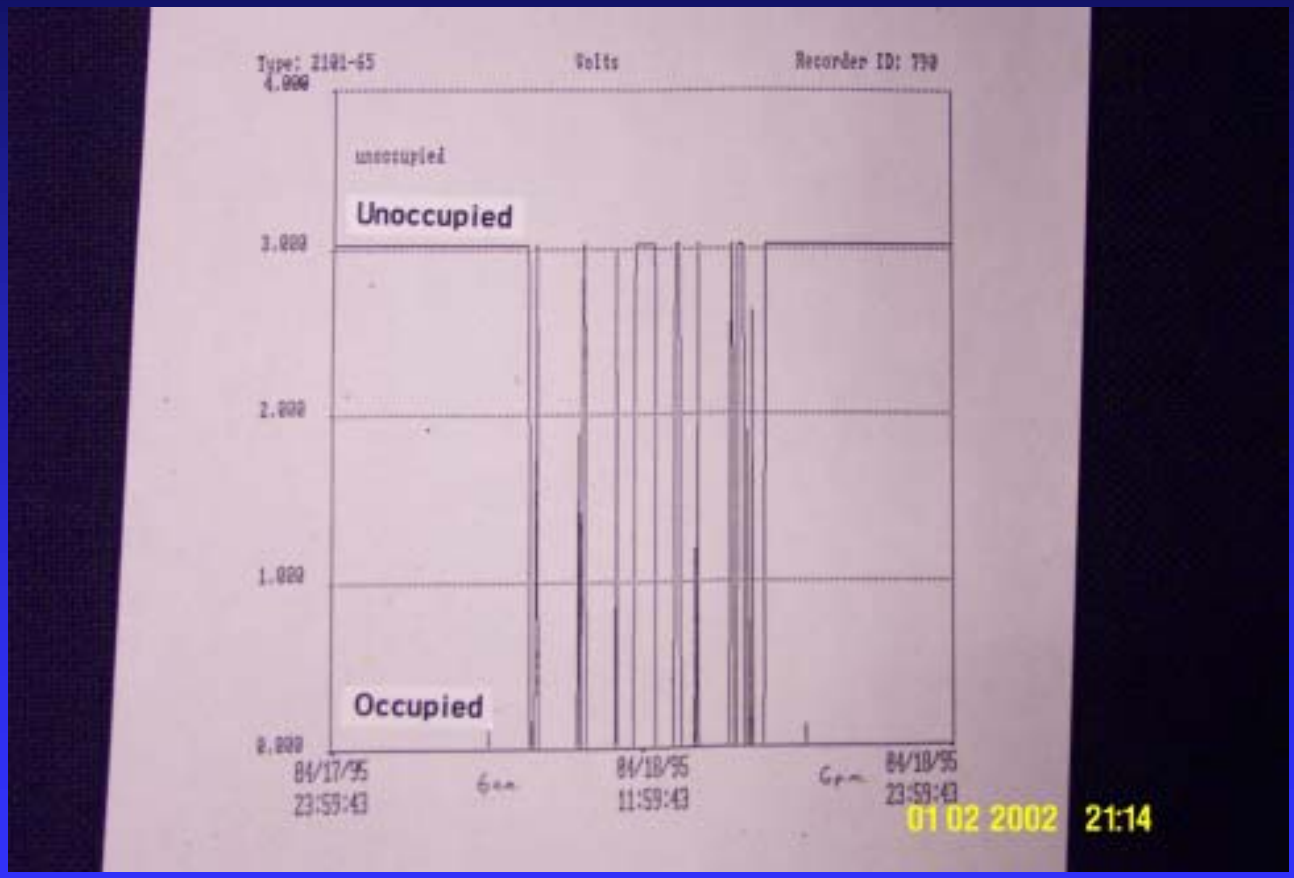
Project Drivers

- Increase number of fume hoods installed
- Increase size of fume hoods
- Add reserve fan capacity
- Improved researcher safety
- Decrease energy consumption
- Decrease greenhouse gas emissions

Project Team

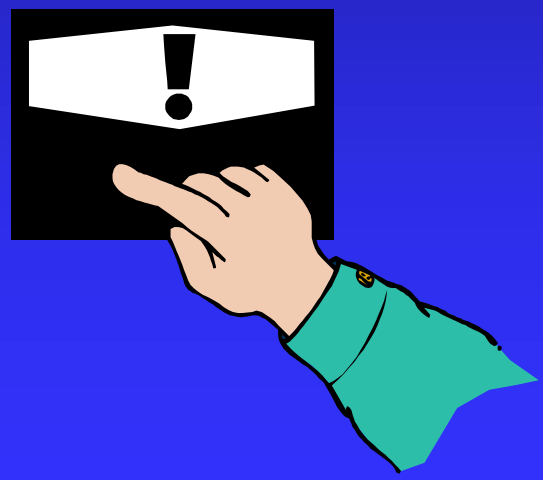
- BMS Environmental Health & Safety
- BMS Wallingford Site Engineering
- BMS Corporate Engineering
- Environmental Controls Technologies, Inc.
- New England Mechanical Services, Inc.

Lab Occupancy Chart

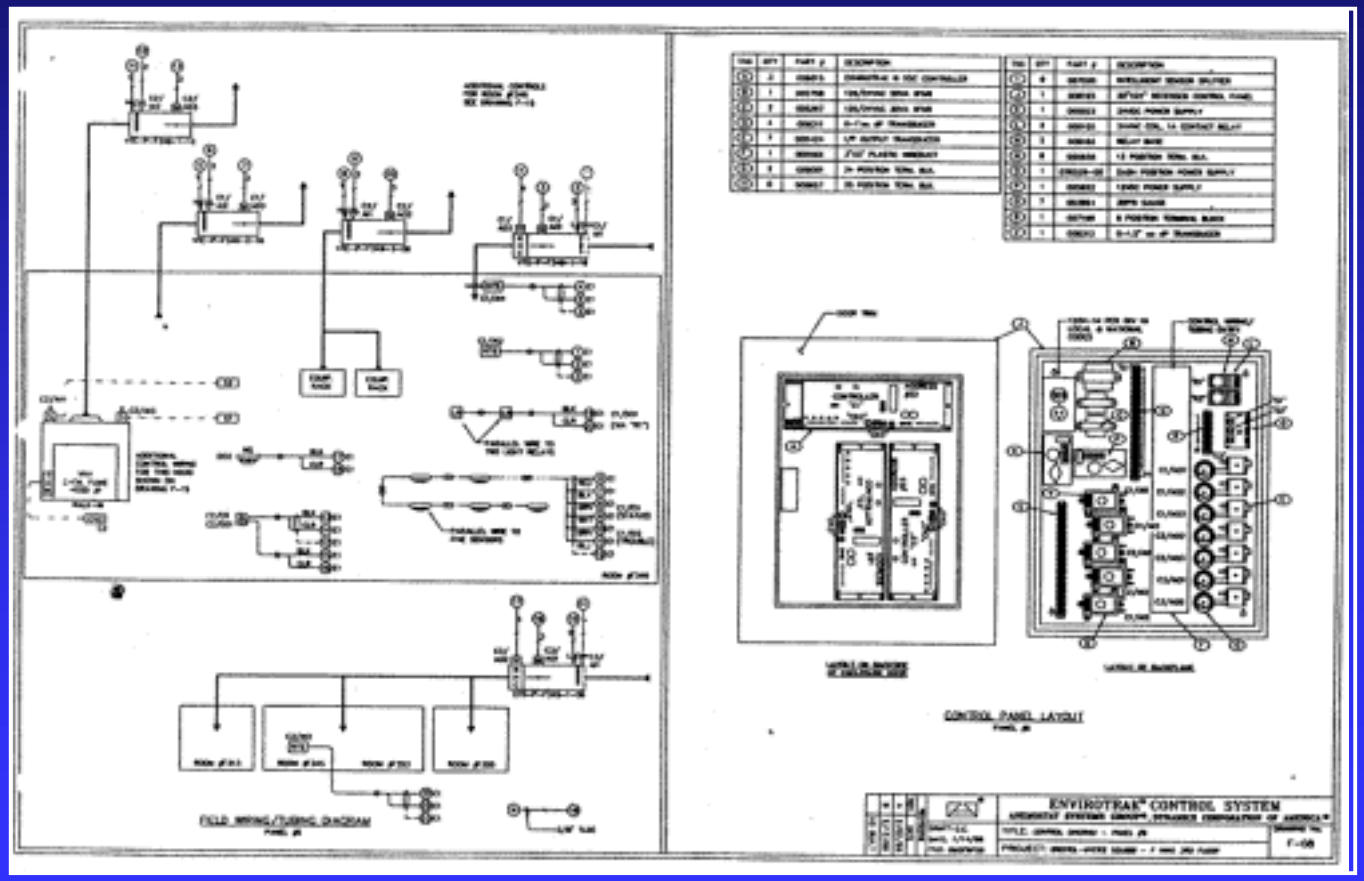


Safety Testing

- ECT Mannequin Testing
- Smoke Generator Tests
- Extensive Researcher Pilot Program



Typical Lab Hook-up Schematic



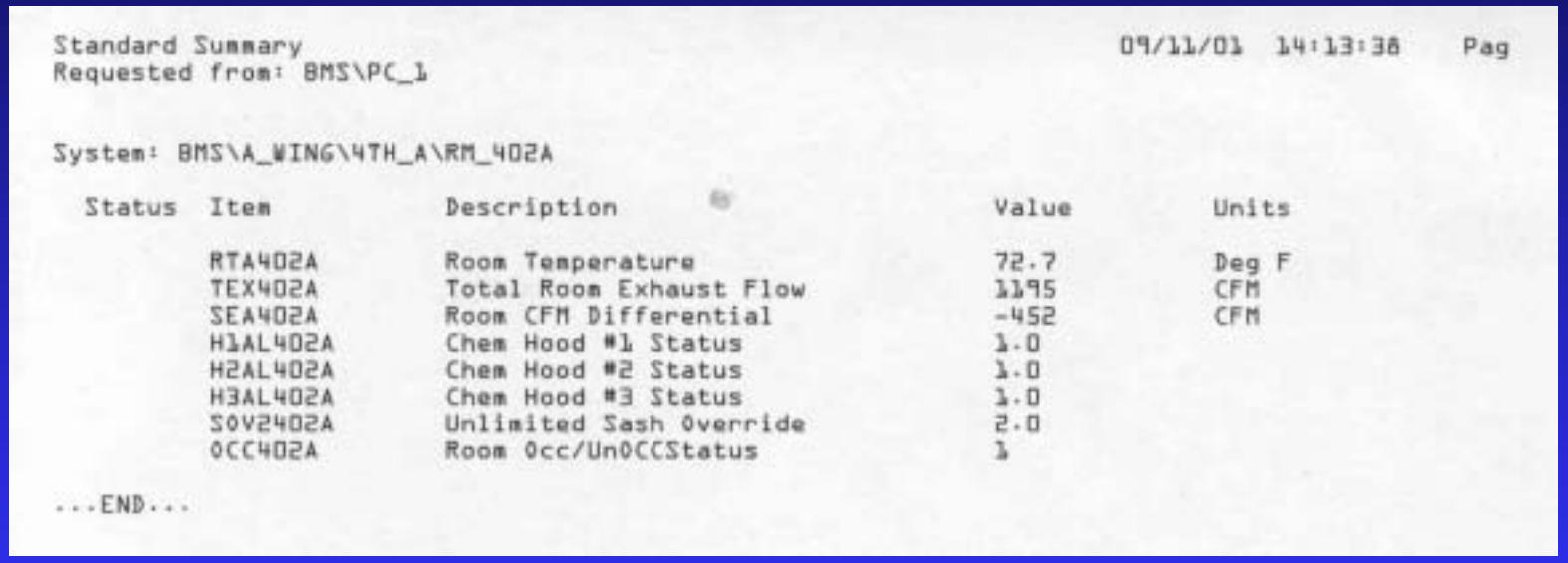
New Controls Equipment

Override Switch

Occupancy Sensor

Strobe Light

Centralized Hood Control Monitoring



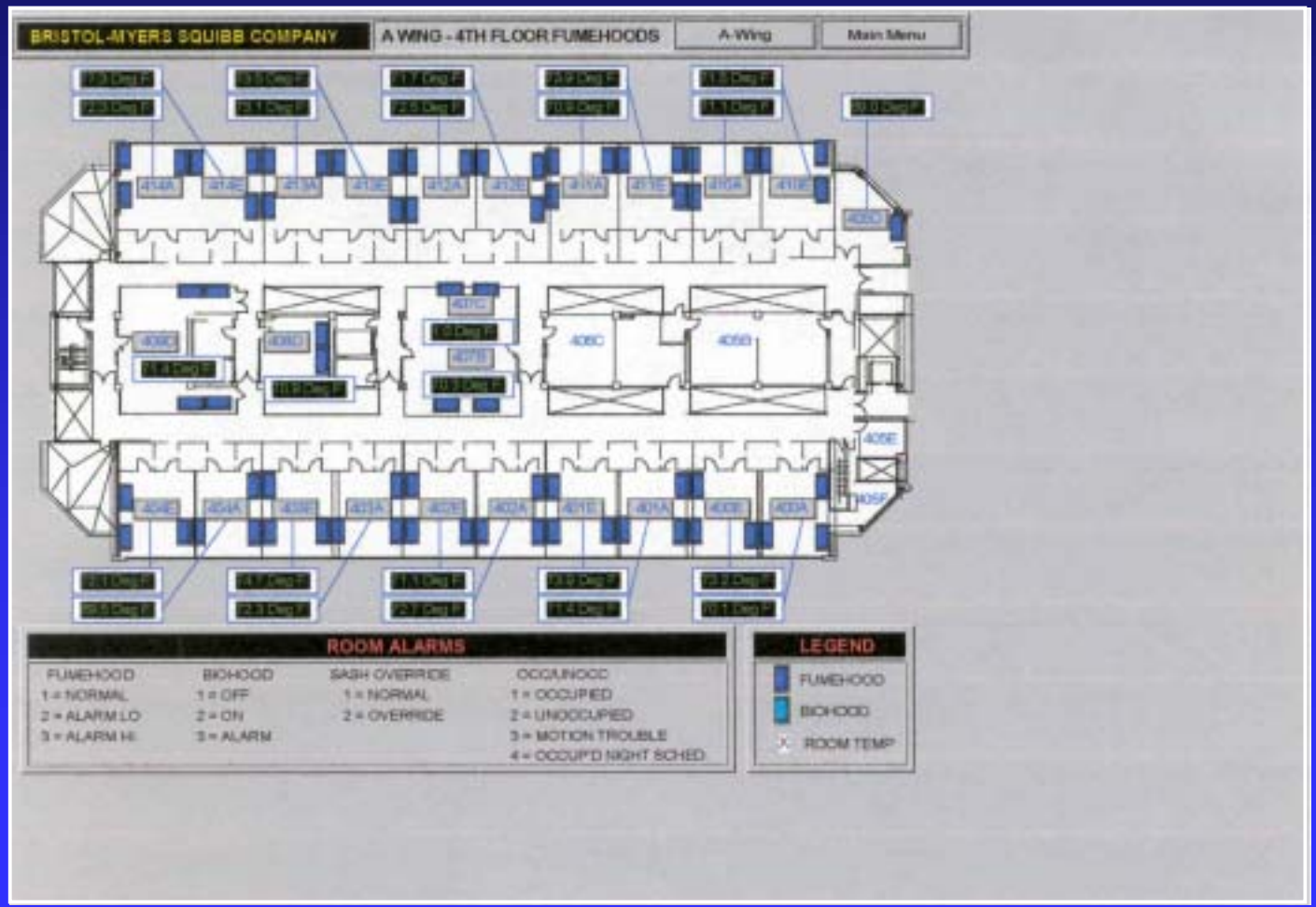
Standard Summary 09/11/01 14:13:38 Pag
Requested from: BMS\PC_1

System: BMS\A_WING\4TH_A\RM_402A

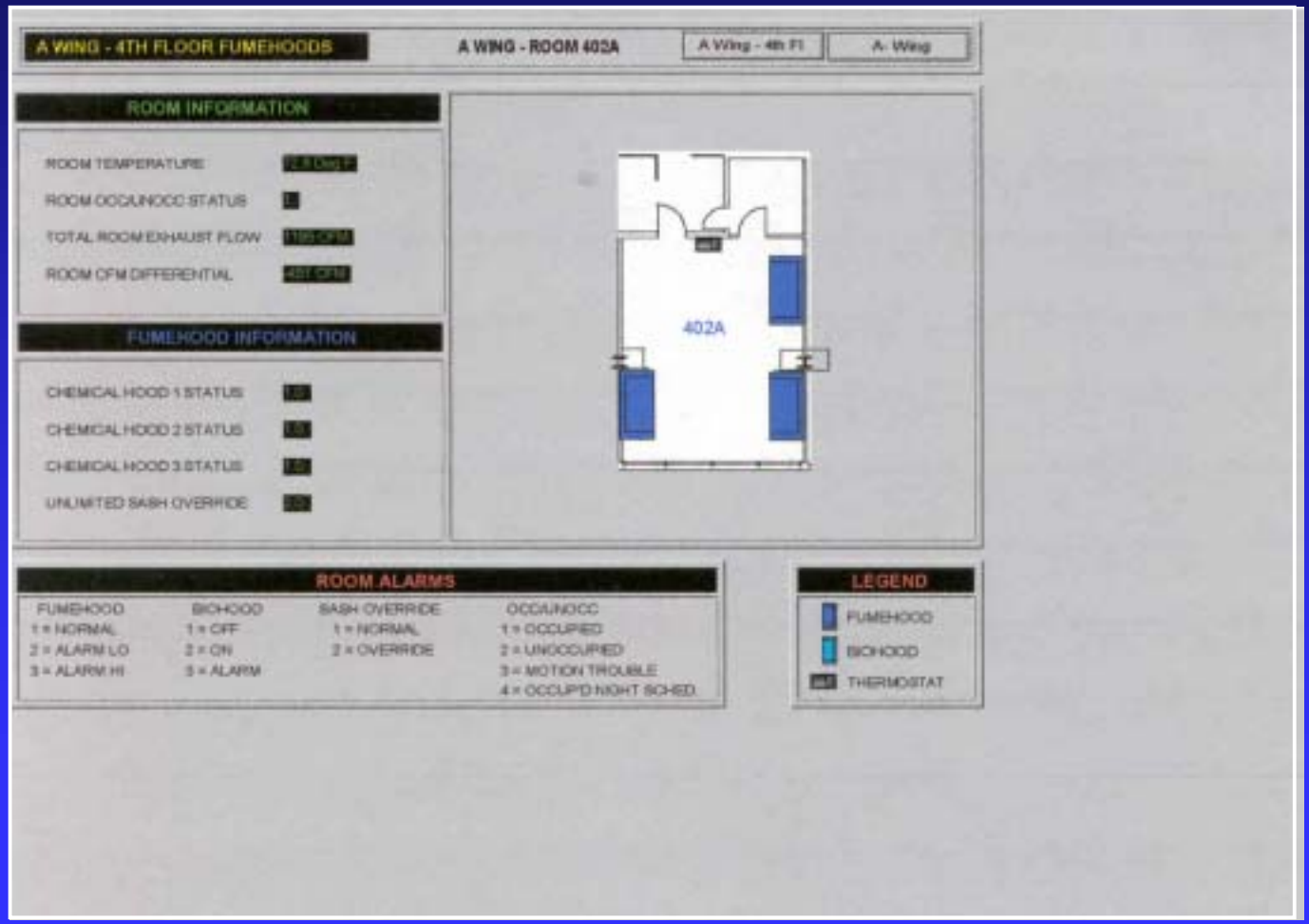
Status	Item	Description	Value	Units
	RTA402A	Room Temperature	72.7	Deg F
	TEX402A	Total Room Exhaust Flow	1195	CFM
	SEA402A	Room CFM Differential	-452	CFM
	H1AL402A	Chem Hood #1 Status	1.0	
	H2AL402A	Chem Hood #2 Status	1.0	
	H3AL402A	Chem Hood #3 Status	1.0	
	SOV2402A	Unlimited Sash Override	2.0	
	OCC402A	Room Occ/UnOCCStatus	1	

...END...

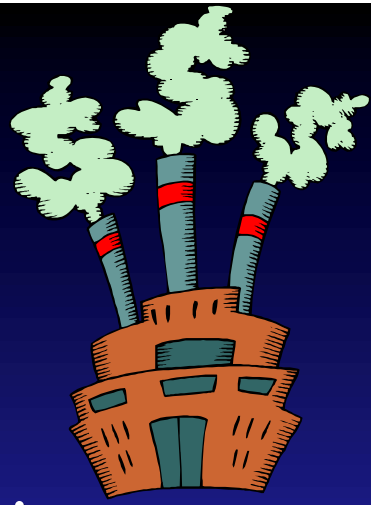
Centralized Hood Control Monitoring - Screen 1



Centralized Hood Control Monitoring - Screen 2

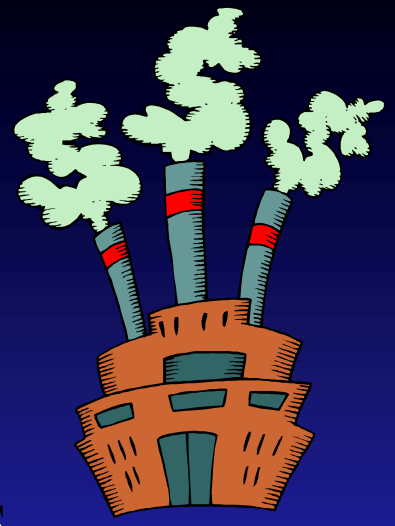


Savings Information



- $4200 / 1000 cfm annual energy savings
- 1,450,812 MBH annual energy savings per 1000 cfm
- $10 MM Capital savings

Savings Information



- Increased fan diversity factor
- $ 340,000 per year energy savings
- Infrastructure allowance for additional hoods with no upgrades (81,000 cfm)
- Emission reductions